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United States Government

Department of Energy

Rocky Flats Office

memorandum

DATE: OCT 30 1990

REPLY TO:
ATTN OF: ERD:SG:9835

SUBJECT: Characterization of Colloids in Operable Unit 2 Soil and Water

TO: D. Catlett, Manager
Los Alamos Technology Office
Los Alamos National Laboratory

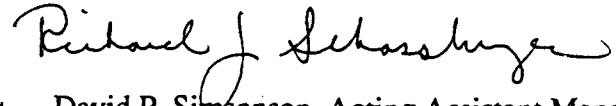
As discussed between Scott Grace of my staff and Tom Norris of your staff, we want assistance in physical and chemical characterization of the colloidal particles in the soil and water in the vicinity of the 903 Pad. We are primarily interested in determination of size, speciation, and mineralogy of colloidal plutonium and americium particles. In the LATO draft report on pyrophoric potential of the 903 Pad area soils, it was recommended that photoacoustic spectroscopy be applied to determine the presence and concentration of colloidal material in soils and ground water.

In addition to using that technique, and characterization of soil colloids, we want to pursue characterization of the mobility of the colloidal fractions of the radionuclides in the ground water and surface water (seeps) in the vicinity of the 903 Pad. This would include determination of radionuclide oxidation state, sample fractionation, mineralogy, ion-exchange properties, water chemistry, and mobility of the actinides. These activities could employ such techniques as molecular weight ultrafiltration, photon correlation spectroscopy, anion/cation exchange resins, X-ray diffraction (XRD), scanning and transmission electron microscopy (SEM/TEM), Energy Dispersive spectroscopy (EDS), fourier transfer infrared spectroscopy (FTIR), pyrolysis/gas chromatography, and/or isotope dilution/alpha spectrometry.

This work has been done by Los Alamos National Laboratory as shown in the publication co-authored by Wilfred Polzer (Environmental Science Technology, Vol 24, No. 2, 1990). The characterization work described in this reference is what we are interested in doing. We want to meet with the staff who would be performing the work and be given a briefing on proposed laboratory equipment to be used. This meeting has tentatively been set for the week of November 13 through 16, 1990.

At this meeting, we would like to see a proposed scope of work so that we can discuss the characterization project.

Should you have any questions, contact Scott Grace of my staff at 966-7199.


David P. Simsonson, Acting Assistant Manager
for Environmental Management

cc: E. Evered, EG&G/RF
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ADMIN RECORD

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